Meeting Summary

Day 1: November 29, 2012

1. Welcome and Introductions

The meeting was called to order at 9:10 a.m., November 29, 2012, by the Chair of the Delta Independent Science Board (ISB or the Board), Dr. Richard Norgaard. Eight members of the Board were present: Brian Atwater, Elizabeth Canuel, Tracy Collier, Edward Houde, Jay Lund, Judy Meyer, Richard Norgaard, and Vince Resh. Two members were absent: Harindra (Joe) Fernando and John Wiens.

Lund disclosed that he is the Primary Investigator (PI) for a project funded by the Delta Science Program: *Integrating Ecosystem, Flood Control, Agricultural, and Water Supply Benefits: An Application to the Yolo Bypass*. He also is the Director of the UC Davis Watershed Science Center, which has some similarly funded projects; however, Lund is not the PI on any of these.

Delta Science Program (DSP) Staff in attendance: Peter Goodwin, Lauren Hastings, Marina Brand, Chris Enright, and Joanne Vinton.

2. Virtual Tour of the Delta

Due to stormy weather, a boat trip to several Delta restoration sites was canceled and instead presented as a virtual tour using Google Earth. To see the slide presentations, click here, and go to Day 1, agenda item 1. Speakers included:

- Chris Enright, Delta Science Program, and Jon Burau, U.S. Geological Survey—Presented an overview of restoration projects. Enright emphasized the importance of the processes that connect the habitat restoration sites.
- Sarah Estrella, Department of Fish and Game—Presented the Hill Slough restoration project. Ponds 1 and 2 are important for the salt marsh harvest mouse. Problems with the site include mosquitoes and PG&E electric towers.
- Ben Wallace, Solano Land Trust (SLT)—Presented the Rush Ranch restoration project. Four people at SLT manage 12,000 acres, including Jepson Prairie and Rush Ranch. Because they have so few staff, they experiment with adaptive management only when they can partner with academic institutions. When they do not have partners, they use a simpler version of adaptive management.

  Board members asked if Wallace has considered using third party monitoring and evaluation of restoration sites to gain objectivity. Wallace said that when staff have time, they work with researchers. For example, they plan to use Peter Moyle's 30-year history of fish monitoring data as targets for restoring fish populations in specific areas of SLT's properties.

  Board members and Wallace agreed that regional monitoring should include assessment of individual projects. Many habitat restoration projects are planned, and if monitored as a group, could provide valuable information for everyone.

  Enright said that the ultimate goal of restoration is conservation of native species. He said that restoration projects are investments in processes that will reconnect landscapes. For example, First Mallard Branch exports cold water when high tides occur at night: the water washes over the marsh, cools, and then returns during low tide. In general, more complex

geometry causes more variable functional responses. Native Delta plants and fishes evolved in a more variable estuary. Their life-history and phenology are adapted to it.

- Curt Schmutte, Metropolitan Water District of Southern California—Presented the Tule Red restoration project. This 380-acre project is being restored to partially meet the 8000-acre restoration requirement in the biological opinions. Funding has been a problem. The site has a good sediment supply—the shoreline is moving towards the bay, but phragmites (a common reed) is hard to control. The location for breaching the levee has not been decided. Construction will take about two years.

- Katie Shulte-Joung, Department of Water Resources—Presented the Property 322 and Blocklock restoration projects. Property 322 is funded through the Fish Restoration Program Agreement (FRPA). The site has subsided about 5.5 feet, so the restoration design is focused on recovering elevation. Remnant tidal channels still exist. One levee was breached in 2006, and it connects the site to Little Honker Bay. At this time, other levees need to be maintained to protect adjacent properties.

  Enright said that restoration needs to be considered at the landscape scale and over decades of time. He suggested that restoration of some sites should wait until adjacent sites are available in order to better restore function.

- Randy Mager, Department of Water Resources—Presented the Meins Landing restoration project. The purchase and restoration of this 670-acre site is a multi-agency effort. The goal is to create 70 acres of salt marsh harvest mouse habitat. Obstacles to restoration are two natural gas pipelines, one oil pipeline, and the associated easements. Owners might be willing to move or abandon the pipelines.

  Burau pointed out that the original channels in the Delta were dendritic, but are now canals lined with rip-rap.

- Dennis McEwan, Department of Water Resources—Presented the Prospect Island restoration project. This project is funded through the FRPA and is being restored to partially meet the 8000-acre restoration requirement in the biological opinions for the water projects. In March 2012, the Delta Region Ecosystem Restoration Implementation Plan (DRERIP) evaluation process and models were used to select alternative project designs. Review under the California Environmental Quality Act (CEQA) will begin early in 2013 with a projected construction start date of 2016.

  Burau expressed concern that if the Sacramento Deep Water Ship Channel is breached at Prospect Island, the water at Liberty Island could become more clear,thereby having a negative impact on the delta smelt that use Liberty Island as they prefer more turbid water.

- Curt Schmutte—Presented the Lower Yolo restoration project, which aims to create 1,100 acres of new tidal marsh habitat near Liberty Island. The Draft Environmental Impact Report is projected to be released for public review on December 22, 2012.

- Robyn Suddeth, Carson Jeffres, Richard Howitt, Nathan Burley, and William Fleenor, U.C. Davis—Presented interdisciplinary research on flood control, agriculture, and water supply in the Yolo Bypass. Findings so far include: 1) ostracods (small crustaceans) were the dominant emergent soil invertebrates found on their research study plots (previously cultivated rice fields); and 2) fish that spent time in the study plots grew fatter. In 2013, another experiment will place 50,000 fish in rice fields, 50,000 in the Toe Drain Canal, and 50,000 in the Sacramento River and a comparison of the various treatments will be conducted to determine the effect on growth and survival. Flooding the bypass more often will have economic effects on agriculture including a loss of revenue to Yolo County and

loss of jobs. Consideration should be given to thinking of the Yolo Bypass not only as a working landscape for ducks but also for salmonids.

This UC Davis group of scientists is also working on a flood model of the Sacramento Valley system in order to optimize the water project's conveyance system. This macro-overview model of the system will have flood and economic components. Group members are also working on a hydrodynamic model of low flow events from the Fremont Weir to Ryer Island. Optimization results will be tested using simulation modeling.

3. Discuss Delta ISB business matters

Rescheduled to Day 2, agenda item 4.

4. Discuss and finalize Delta ISB memos on the Bay-Delta Science Conference

Rescheduled to Day 2, agenda item 9.

4:33 p.m. – Adjourned

Day 2: November 30, 2012

1. Welcome and Introductions

The meeting was called to order at 9:00 a.m., November 30, 2012, by the Chair of the Delta Independent Science Board (ISB or the Board), Dr. Richard Norgaard. Eight members of the Board were present: Brian Atwater, Elizabeth Canuel, Tracy Collier, Edward Houde, Jay Lund, Judy Meyer, Richard Norgaard, and Vince Resh. One member was absent: Harindra (Joe) Fernando. John Wiens called in as a member of the public.

Delta Science Program (DSP) Staff in attendance: Peter Goodwin, Lauren Hastings, Marina Brand, and Joanne Vinton.

2. Delta ISB Chair's Report

Collier gave the ISB report to the Delta Stewardship Council (Council) on November 15 because Norgaard had other commitments. To view the video, go to http://dsc.videossc.com/archives/111512/, then scroll down to and click "Agenda item 10, Archive Segment Number 44 of 46." Collier was impressed with the report on the historical ecology of the Delta provided by staff from the San Francisco Estuary Institute (SFEI) to the Council and recommended that a presentation focused on the application of the historical ecology findings be presented to the Board at a future meeting.

3. Delta Stewardship Council (DSC) Chair's Report and Executive Officer's Report

Chair Phil Isenberg suggested the following websites for keeping up with events in the Delta:

- Maven's Notebook (blog) by Chris Austin

  http://mavensnotebook.com/

- Aquafornia (blog) and the Weekend Wrap-up by Chris Austin

  http://www.aquafornia.com/

  To subscribe to the Weekend Wrap-up, send email to Robin Douglas at RDouglas@watereducation.org

- Valley Economy (blog) by Jeffrey Michael, Ph.D.

  http://valleyecon.blogspot.com/

Subscribe to RSS feeds in the right-hand column.

The Recirculated Draft Delta Plan Programmatic Environmental Impact Report (RDPEIR) and Notice of Proposed Rulemaking were posted on the DSC website on November 30. Comments on the RDPEIR are due by Monday, January 14, 2013. For more information, click here. For a list of next steps for the Delta Plan, click here.

A comparison between the Bay Delta Conservation Plan (BDCP) and the 1982 proposed Peripheral Canal is posted on the BDCP website. In addition, the BDCP will include an expanded economic analysis, appears more willing to fortify Delta levees in some instances and is considering near-term actions. There should be a preferred BDCP alternative available early 2013.

4. Discuss Delta ISB business matters (from Day 1)

Board members discussed rotation of the Chair and Vice Chair positions. Norgaard suggested a new structure with three people in leadership positions. Each leader would take responsibility for one of the following: the Delta Science Plan, the BDCP, or the next review of a science program in the Delta. Goodwin suggested a model where the immediate past chair, the current chair, and the vice chair lead the Board. The vice chair would be the next chair and each could serve a two-year term. This matter will be discussed more at the January 9 teleconference and January 16-17 meeting. The Board might revise their operating guidelines, which discuss election of the Chair and Vice Chair and their respective duties.

Board members also discussed how to close their review of habitat restoration programs in the Delta. The Board decided to invite researchers from the U.S. Geological Survey and various consultants to their January 16-17 meeting before closing the review. Resh and Canuel will write a proposal for a template or roadmap for the final report for this review. The proposal will be discussed at the January 9 teleconference and January 16-17 meeting.

5. Federal Government Agency Managers

Representatives from four federal agencies were invited to discuss their habitat restoration projects in the Delta. Speakers included:

Sue Fry, Manager, U.S. Bureau of Reclamation (BOR), Mid-Pacific Region, Bay Delta Office—For information about activities in the Bay Delta Office, including restoration in Yolo Bypass, click here.

Mike Dietl, U.S. Army Corps of Engineers (ACE), Sacramento District—For information about activities in the Sacramento San Joaquin Delta, click here. Responsibilities include levee safety, emergency response, ecosystem restoration, and flood risk management.

Mike Chotkowski, U.S. Fish and Wildlife Service (USFWS), Bay Delta Office—The Bay Delta Office handles mostly regulatory activities associated with implementing the Endangered Species Act (ESA). The Lodi field office (formerly in Stockton) is responsible for science in the Delta through the Interagency Ecological Program. The Sacramento field office is responsible for terrestrial issues in the Delta. The Bay Delta Office jointly implements the ESA with the National Marine Fisheries Service. The Office will not make any decisions regarding the BDCP until it receives a permit application. Currently, the office offers technical advice.

Jeff McLain, National Marine Fisheries Service (NMFS), Southwest Region, Central Valley Office—McLain participated by phone and joined late, so did not have an opportunity to introduce himself. For information about activities in the Central Valley Office, click here.

The Board asked how credits are assigned for restoration projects. Chotkowski and Fry said that the 8000 acres of tidal marsh restoration required by the USFWS biological opinion is a

requirement, not available for credits in a mitigation bank. If the BDCP is approved, the BDCP requirement for restored tidal marsh might include those same 8000 acres, in other words, "credited" to BDCP. These credits are not the same as mitigation bank credits.

The Board asked how restoration projects are evaluated. Fry stated that that the restoration areas will be monitored to determine effectiveness and requirements adjusted as needed. Chotkowski stated that historically, adaptive management has not been used and instead they have tried to front load requirements. They have found, though, that it is difficult to front load aquatic projects and so the intent is to institute a means of learning through implementation using performance monitoring, etc. There was agreement that focusing on the number of acres restored is not the best measure of success and that the focus should be on the effectiveness of the acres restored. One member of the Board stated that "credits" for acreage restored dis-incentivizes adaptive management. Board members also said that a way needs to be found to ensure a long term commitment to restoration projects rather than allowing the proponent to walk away after the acreage has been restored. Lund suggested the use of discounting "credits". This is a topic of discussion in Fry's office.

The Board asked how climate change and sea level rise are incorporated into restoration projects. For ACE, consideration of climate change is in their regulations. BOR's planning horizon is 2030 and therefore is using the climate change predictions for 2030. It is also using climate change assumptions and modeling from the BDCP. USFWS policy requires analysis of the effects of climate change. The primary concerns are sea level rise, change in temperature, and change in precipitation.

The Board asked about independent evaluations of restoration projects. USFWS has the project proponents do the analysis and then the USFWS reviews those. They also scale their requirements based on the size and potential effect of the project. The higher the influence of the project the greater the requirement for outside, independent review. In addition, federal agencies must follow guidelines under the Information Quality Act. BOR does not currently require outside review, and tasks for evaluation need to be included in future agreements. ACE requires independent peer review before and during construction. The Board stated that project monitoring and evaluation should be done by an independent third party.

The Board asked about long-term strategic planning. USFWS and BOR can respond only to proposals. These agencies are set up to react to projects. They are limited in the ability to impose a requirement for strategic planning on others and the USFWS recognized that there may be short-term projects that are at odds with what should be done on a long-term basis. NMFS staff are writing a recovery plan under the ESA that has a Central Valley-wide perspective. It includes a set of actions.

The Board asked to what extent recovery plans are followed. For the USFWS, it depends on the stakes. For the NMFS, the agency's anadromous fish restoration program (CVPIA) is followed fairly closely, but in general, restoration project managers undertake the easiest actions.

The Board asked for regional coordination of work done by federal and state agencies.

6. Lead Scientist's Report

Goodwin announced the following:

- The Delta Science Program (DSP) recruited two state fellows to work in the DSP office: Katie Morrice, who has a background in biology and fluid mechanics; and Emily Mortazavi, who has a background in geology. They will be working at the DSP for one year starting in January 2013.

- DSP supported the State Water Resources Control Board by organizing expert panels for the Comprehensive Review of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. For more information, click here.
- The Delta Science Program and the Center for Aquatic Biology and Aquaculture (CABA) at UC Davis are convening a workshop on natural flows on January 18, 2013. For more information, click here.
- DSP is organizing a Delta Science Fellowship Orientation / Early Career Leadership Workshop from January 22 to 25; details will be available later.
- The 2012 Long-term Operations Opinions Annual Review report is posted here.
- The Delta Science Plan is a priority. The plan may be structured similar to the Puget Sound Partnership Science Plan. Components will include best available science and science in support of adaptive management.

  Observations and discussion included using "common" science rather than best available and that science should inform, not drive, decisions. One member expressed that the science needed to solve Delta problems will look very differently than the science that is being done today. Changes in the way agencies do things and additional legislation may be required to enable participation in a common science program.

7. Discuss Google Earth virtual tour from previous day

Monitoring and evaluation of restoration projects are important, but funding is not usually available for that type of work. Also, no one is sure how to evaluate projects, so the Board needs to create a framework for it. Size, scale, and connectivity are important when planning restoration projects. Simulation modeling will be needed to try to foresee the effects of restoration projects.

There seemed to be minimal guidance about project objectives, how they help meet the larger regional goals and how regional efforts will be integrated at the system-wide scale. Goals need to be clearly articulated. The intentions are good, but not sufficient for meaningful restoration. A major challenge is integrating all of the efforts. It is not productive to think about projects in isolation, and in fact, that can be misleading. There needs to be integration and adaptive management based on that broader integration. Adaptive management needs to be based on broad agreement. The Delta Science Plan will need to offer solutions to these problems and find a way to integrate all the separate restoration efforts in the Delta.

The approach to restoration seems to be opportunistic—finding land to buy and getting the permits for the project. Big scale science is missing—for example, consideration of watershed-scale issues. There also appears to be a lack of understanding of historical ecology and how that would influence the success of restoration efforts. Consideration should be given to adaptive learning rather than adaptive management.

8. Discuss "Draft Charge to Delta ISB for Review of the Draft BDCP EIR/S"

Dan Ray, Delta Stewardship Council, spoke to the Board regarding their review of the BDCP EIR/S. For the Council, important questions are: How will the BDCP fit into the Delta Plan? Will the Delta Plan still make sense? Will the BDCP promote the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem? The Council would like the Board to review parts of the BDCP EIR/S that are uniquely within the Board's areas of expertise. Some issues that the Board should review could include: Will the BDCP really work? Are the goals and objectives clearly articulated? Does the BDCP have a reasonable range of alternatives? Are the mitigation measures adequate and

feasible? Does the analytical approach of the effects analysis use the best available science? Does it provide for the needs of the covered species; for example, their ability to move across the landscape? Is the adaptive management plan sufficient to deal with uncertainty?

The Board also made it clear that its comments will be based on the adequacy of the science supporting the BDCP conclusions and that it is not making legal decisions or regulatory statements.

To read the draft charge, click here.

Public Comment

Michael Brodsky, Save the California Delta Alliance – Brodsky suggested adding the following questions to the charge:

1. Should fish screens be used and the Delta Cross Channel gates operated differently in order to improve water quality?

2. Is the BDCP solving the right problem?

3. Are the alternatives adequate? Did the alternatives look at more ground water recharge?

4. Should an intake in Yolo Bypass be considered?

5. Is it good science to change the water delivery system first and then figure out the science?

Public input could be useful to the ISB by flagging issues. There is a need to address the operating constraints around the legal requirements. The problem is that water is received at the wrong time and at the wrong place and we are not able to deal with it.

Jon Rosenfield, The Bay Institute, felt that the charge as written seemed adequate. BDCP is a recovery plan and as such, it needs to identify desired biological outcomes for the affected species and ecosystems. Rosenfield suggested adding the following questions to the charge:

1a. Does the BDCP adequately define its goals and objectives?

1b. Have these goals and objectives been defined in a specific, measurable, time-specific manner?

1c. Are species and ecosystem-specific goals and objectives (see 1a and 1b) sufficiently supported by the best available science (in other words, have scientific principles and knowledge bases been brought to bear to define “reasonable,” “achievable” biological outcomes and time frames?)

2. The geographic scope of the review should include impacts to and from management activities and foreseeable trends in ecosystem processes (for example, related to climate change, water storage, marine and bay management) both upstream and downstream of the Delta. For example:

a. Have impacts to flow and temperature conditions upstream of the Delta resulting from BDCP actions in the Delta been described? Have those impacts been adequately factored into analyses of projected outcomes of the Plan?

b. Do BDCP actions increase or decrease (or fail to increase or decrease) the geographic range or life history diversity of target species (for example, Spring-run Chinook) or invasive species (for example, *Potamocorbula amurensis*, *Egeria densa*)? Have these potential effects been adequately analyzed / addressed?

9. Discuss and finalize Delta ISB memos on the Bay-Delta Science Conference (from Day 1)

The Board discussed its draft suggestions for future conferences that will be sent to the 2012 Bay-Delta Science Conference organizers. Atwater will add Lund's comments to the memo and remove comments from individual Board members. Comments from individual Board members will be sent separately. The final version of the memo is posted here.

10. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

None.

11. Recap outcomes of the meeting

- Review action items

  Atwater will finish the memo to the Science Conference organizers.

  Resh and Canuel will write a proposal for a template or roadmap for the final report for the climate change/habitat restoration review.

- Discuss the Delta ISB workplan

  The Board needs to wrap-up the habitat restoration review, start the BDCP review when the documents are available—sometime in 2013—and work with Goodwin on the Science Plan.

- Prepare for the next Delta ISB meeting in January

  January 9 teleconference, noon to 2 p.m.

  January 16-17 meeting – The Board would like scientists from the U.S. Geological Survey present research that they are working on, have consultants present work they are doing on habitat restoration and mitigation banking in the Delta, and have a presentation from SFEI on their work on the historical ecology of the Delta. Several members will attend the CABA seminar on the following day.

Future meeting dates include February 14-15 and April 18-19. Staff will distribute another Doodle Poll to develop meeting dates for March and the remainder of 2013.

4:20 p.m. – Adjourned